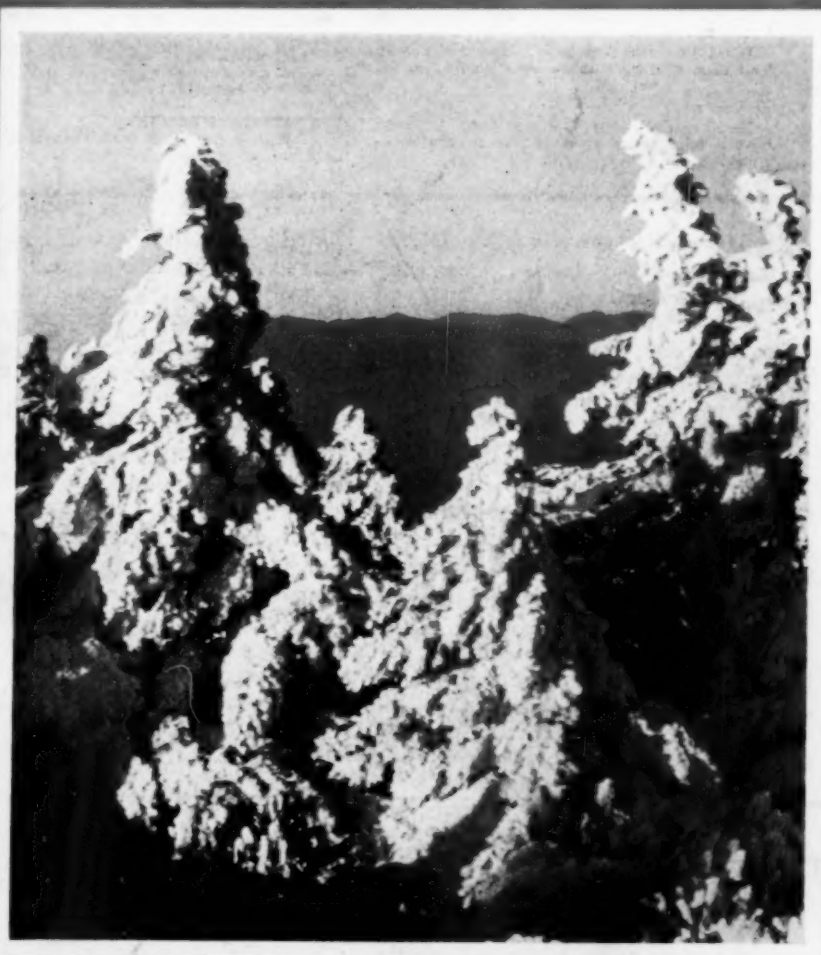
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



January 3, 1942

Winter Beauty

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A SCIENCE SERVICE PUBLICATION

Do You Know?

The British War Office finds that about one suggestion in every 400 submitted by *inventors* is useful.

Germany is expected to get the bulk of Spain's present *orange crop*, which is 30% smaller than last year.

A new type of *porcelain* is introduced as a substitute for plastics, aluminum and hard rubber in many situations.

Ohio claims more *greenhouse acreage* than any other state, mainly because of its vegetables grown under glass.

A part wool *blanket* should contain at least 25% wool to be noticeably warmer than an all-cotton blanket.

Brown University's *defense courses* include Russian, cryptanalysis, map reading and construction, and gunnery.

The *crowned pigeon* of New Guinea is as big as a small turkey and is distinguished by its fan-shaped bluish crest.

A way has been found to put up natural, unprocessed Swiss and American *cheese* in pound packages, so that it is protected against mold.

Thick blue *paint* on porthole window glass and a dark, muddy-colored gray paint on the hull are found useful in making ocean liners inconspicuous.

Oyster shells are made of aluminum, calcium, copper, iron, magnesium, manganese, silica, zinc, water, chlorine, carbon dioxide, and nitrogen, with traces of other ingredients.

QUESTIONS DISCUSSED IN THIS ISSUE

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Mothers are the least well-fed members of the low-income family, Canadian nutritionists report.

An Egyptian *thimble* 2,300 years old is among historic sewing implements exhibited at New York's Cooper Union Museum.

Coffee substitutes in Nazi-controlled Denmark contain such ingredients as grains, chicory root, dried sugar beet, peas, and "husks," the U. S. Department of Commerce learns.

As a source of *alcohol* needed in making smokeless powder, the U. S. Government has stored 10,000,000 bushels of surplus corn, with another 10,000,000 bushels in reserve for later use, if needed.

Methods of making wall board from *seaweed* have been developed in Ireland.

A *tank destroyer* designed for the Army is a tractor-like machine which carries a 75mm. cannon at 75 mile-an-hour speed.

Stones from the size of pebbles to rocks have been found in *stomachs* of the seal, walrus, and sea lion, but scientists do not agree as to the reason.

A report from Moscow says that, preparing for *winter fighting*, soldiers in the Moscow area have practised marching on skis over rough terrain, tossing grenades and shooting from various positions on skis; and first aid detachments on skis have been organized.

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GENERAL SCIENCE

Even in War, Science Saves More Than it Destroys

President of AAAS Asserts That Opposition To Totalitarianism Is Fight for Individuality

TOTALITARIAN governments fight against nature itself when they try to make everyone alike, Dr. A. F. Blakeslee, of the Carnegie Institution of Washington declared in his address as president of the American Association for the Advancement of Science.

"Opposition to totalitarianism is not merely because it attacks man's rights but also because it suppresses his personality," Dr. Blakeslee said. "Individuality is the kernel of democracy, the biological basis of the struggle for freedom. When we fight for individuality we fight on the side of nature."

In support of his thesis, the speaker cited many examples of unpredictable individual differences among superficially similar persons—differences reaching even to such things as inability of some to taste or smell substances that are extremely disagreeable to others. Everywhere in nature, individual differences are the universal rule. "Like as two peas" is not only trite but untrue: it should run, "Unlike as two peas."

Dr. Blakeslee also defended science against the charge of ruining the world through helping to make war more deadly and destructive. Admitting that some of the contributions of science have been perverted by evil men to evil uses, he declared that this is more than offset by the life-saving functions of science even in war.

"Deaths due to battle injuries increased from 15 per thousand for the Mexican War through 33 for the Civil War to 53 for the first World War," he stated. "The death rate due to disease, however, decreased from 110 through 65 to 19 for the World War. The result is that the total death rate declined from 125 in the Mexican War through 98 in the Civil War to 72 per thousand in the World War.

"It is a satisfaction to feel that though implements of war have increased in destructiveness, those who are fighting to preserve our free way of life may not be subjected to greater risks than our forefathers assumed when they too fought for their country."

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No "Jungle Law"

THE "LAW of the jungle" does not apply to human relations, Prof. Alfred E. Emerson of the University of Chicago said in his address as president of the Ecological Society of America. The principle of cooperation is found working in all living organisms, he said, and is far more important in the evolution of human society than is the "struggle for existence" between human individuals or human groups.

Over-emphasis upon the principle of natural selection proposed by Darwin, and failure to keep abreast of later scientific concepts, were held responsible by Prof. Emerson for the persistence of this over-simplified, over-sanguinary outlook:

"Darwin emphasized natural selection as the basic mechanism of evolution. Today we feel that our knowledge of the genetics of variation and the role of isolation gives us a clearer picture of evolutionary dynamics. However, natural selection is still of tremendous importance, not so much as the prime factor in the origin of all species as it is the explanation of practically all complex adaptation."

The tendency on the part of some persons to idealize the social development of such insect communities as beehives and ant colonies, even to the extent of regarding them as models for humans to follow, is apt to be misleading, the speaker warned. Human beings and insects are too unlike for one to gain much by aping the other.

"Human social evolution has taken place with great rapidity compared to the slow evolution of insect societies," he pointed out. "We also find such human social systems as political government, law, police, educational institutions and religion lacking among the insects."

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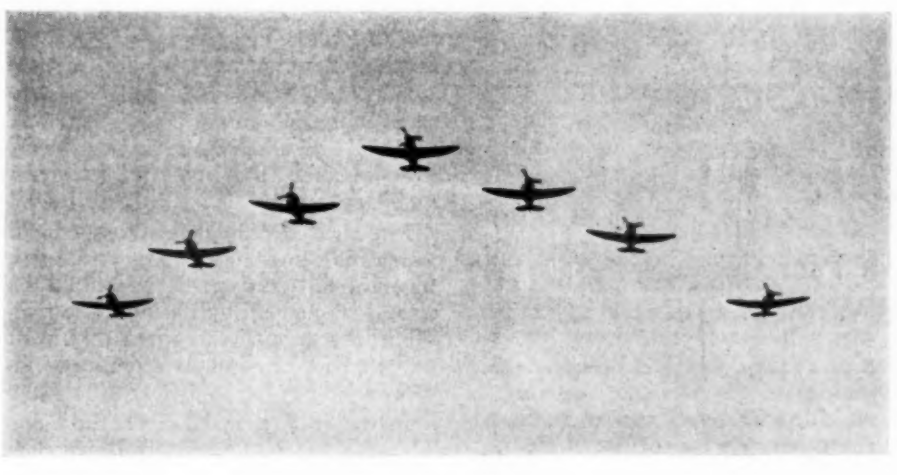

FOR VICTORY

These pursuit planes can climb high into the lower layers of the stratosphere and battle the enemy above the clouds. They are Republic P-43 planes.

Plant Tissue Aids Research

MASSES of plant tissue, separated from the parent plant and growing in laboratory dishes of nutrient solution, are yielding answers to old puzzles about life processes that could not be learned from whole plants because they are too complex, Dr. Philip R. White of the Rockefeller Institute for Medical Research, stated in the Stephen Hales Prize address before the American Society of Plant Physiologists.

The ideal goal of the tissue culturist, Dr. White said, is to obtain a single plant cell and make it live and grow all by itself. This has not yet been attained; the nearest scientists have come to it is the culturing of bits of fairly uniform, undifferentiated tissue, with thousands of cells all essentially alike.

With such tissue cultures, the limits of plant tissues' appetite for iron have already been determined. Any solution

with a concentration of more than one part of iron to 50,000 of water is poison to the cells. Yet if the solution entirely lacks iron the tissue stops growing and will not resume growth until at least a trace of iron is supplied. Other tests have suggested that plant cells prefer to feed on sucrose (cane sugar) rather than the simpler sugar, glucose; a conclusion at variance with the statements in most textbooks. Still further researches are being conducted on mineral requirements, vitamin, enzyme and hormone reactions, and other physiological problems simplified by the undifferentiated samples of plant life in the laboratory dishes.

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PSYCHOLOGY—MEDICINE

Scared Feeling, Tearfulness Cured in 30 Minutes

Injections of Vitamin B_1 Give Quick Relief When Difficulty Is Caused by Vitamin Lack

A CONSTANT scared feeling, short tempers, poor memory, easily hurt feelings and tearfulness can be cured in from 30 minutes to 20 hours by injection of vitamin B_1 (thiamin) when the upset state of mind and feelings has been caused by lack of that vitamin in the diet, Dr. Tom D. Spies, of the University of Cincinnati and Hillman Hospital, Birmingham, told members of the Association for Research in Nervous and Mental Disease.

The patients whom he and his associates, Dr. John Bradley, Dr. Milton Rosenbaum and Dr. John R. Knott, examined did not have any symptoms of beriberi or polyneuritis, the serious ailments due to lack of vitamin B_1. But questions about what they usually ate showed they were not getting enough of this vitamin.

Not every nervous, frightened, irritable person can be cured by the vitamin because such upset emotional states, generally called neurasthenia, may occur from other causes than lack of vitamin B_1, Dr. Spies emphasized. The vitamin treatment, therefore, is advised only for patients who have not been getting enough of it in their food.

The swift recovery of the patients he reported apparently shows that the vitamin lack had kept their brains from functioning efficiently but had not damaged the brain cells. In some cases actual damage to brain structure might occur from the vitamin lack and in such cases recovery will not come "overnight," Dr. Spies pointed out. In such cases all the doctor can do is to supply the lacking vitamin to halt the damaging process and help the body repair the damage.

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PSYCHOLOGY

Better Teaching In School Will Help Children's Diet

Experiment Shows That Even in Poor Community General Diet Can Be Improved Without Other Aid

GIVING a child better food to eat may not improve his school grades, but improving the instruction he gets in school will insure that he eats better food, Dr. Harold F. Clark, of Teachers College, Columbia University, told the American Association for the Advancement of Science in Dallas.

In wartime, as well as in peace, schools can be a crucial factor in bringing about an adequate diet to make America fit, he said in revealing details of an experiment conducted by the Sloan Foundation to show that through the schools the diet of even a very poor community can be improved without outside aid.

Even among the bottom third of the population, the proper school instruction can greatly improve diet, Dr. Clark said.

The improved diet is not always reflected in improved school work, however. Where children are suffering an extreme lack of some vitamin, supplying the vitamin in large amounts greatly stepped up their rate of learning. In cases not so extreme the effect was little.

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Need Understanding Peace

WHEN peace comes it must be based on understanding if it is not to be another Munich Pact sort of peace, Dr. H. Meltzer of the Psychological Service Center, St. Louis, told the American Association for the Advancement of Science.

In industrial relations, he said, in family relations, school relations as well as international relations, there is no promise in the peace that is a fiction, an hypocrisy.

Language should be the best means of providing understanding. But as it is used by some people, Dr. Meltzer indicated, it only serves to excommunicate them from their fellows rather than to promote mutual understanding.

"There is only one kind of peace the mental hygienist would advocate," he said, "and that is based on the kind of understanding that makes further understanding possible."

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Bilingual Teaching

IMPORTANCE of teaching both Spanish and English to grade school children in America's Southwest and Puerto Rico was stressed by Prof. Herschel T. Manuel, of the University of Texas, speaking before the American Association for the Advancement of Science.

"If English-speaking and Spanish-speaking peoples of the United States are to build an effective democracy," said Prof. Manuel, "they must speak a common language."

In Puerto Rico, he pointed out, a child starts his schooling in his vernacular, Spanish, and does not begin to read the second language, English, until the middle of the second year. From that point on, the part English plays gradually increases.

In the Southwest, however, the Spanish-speaking child generally has no opportunity to study his vernacular until he reaches high school. Many of these children, Prof. Manuel said, fail to develop proficiency in either language.

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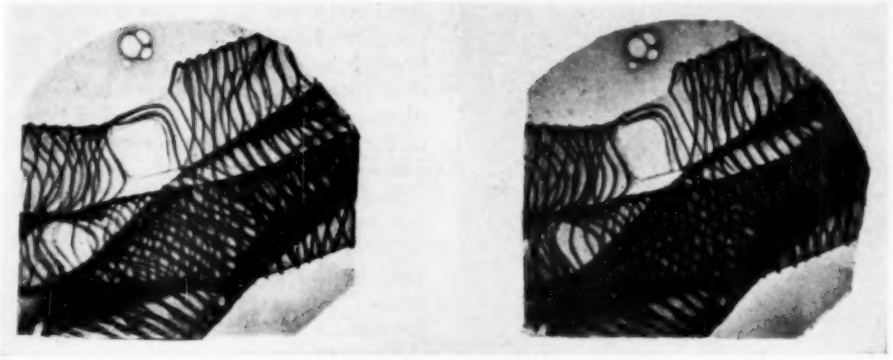

FROM SUBMICROSCOPIC WORLD

Aided by such stereo electron micrographs as this, scientists at the meeting of the American Association for the Advancement of Science were able to see, with a 3-dimension effect, objects not visible at all with ordinary microscopes. This is a mosquito larva trachea. Place a card between the two photographs with one edge against the page and the opposite edge against your face so that your left eye looks only at the left view, your right eye at the right one, and see whether you can get the 3-dimension illusion.

PHYSICS

See Three-Dimensional Images Of Submicroscopic Particles

Electron Microscope Used To Make Stereoscopic Pictures of Lining of Mosquito Larva Trachea

VIEWING invisible particles as huge, rugged, three-dimensional chunks that "stuck out" from the projection-lantern screen, an audience of physicists attending the meeting of the American Association for the Advancement of Science in Dallas sat in something like schoolboy awe, while Dr. V. K. Zworykin and Dr. J. Hillier of the RCA Research Laboratories explained this latest wonder of the electron microscope.

The electron microscope, now becoming well known for its capacity to make visible on a large scale details too fine to be detected at all with light-using instruments, produces its images by means of magnetically focussed streams of atomic particles. Hitherto it has been used only to take pictures from a single "shooting angle," so that its micrographs were like single, "flat" photographs.

The two RCA physicists have solved the problem of making the big instrument take stereoscopic pictures, that is, shots from two slightly different angles. The specimen holder is so built that it can be rotated through 180 degrees between exposures. The resulting photographs are then mounted so that they can be viewed through a stereoscope, like the parlor delight of our great-grandmother's time. Or, the twinned pictures can be made into a double lantern slide, and the audience provided with special Polaroid goggles which bring out the three-dimensional effect even more strikingly.

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Insect Parts Photographed

ELECTRON photomicrographs of almost unimaginably thin linings of insect breathing tubes were shown to the meeting by Dr. A. Glenn Richards of the University of Pennsylvania and Dr. Thomas F. Anderson, RCA Fellow of the National Research Council. Some of the details, invisible even with the highest powers of light-using microscopes, help to explain why certain insects are resistant to poison dusts and fumes while others are not.

The photographs, made with streams of atomic particles instead of waves of light, show that although the uppermost layer of the cuticle lining a cockroach's breathing-tubes (which serve insects in place of lungs) is only 2.5 microns (one ten-thousandth of an inch) in thickness, it is composed of two layers, the thinner of which has a thickness of the order of a hundredth of a micron.

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Wave Mechanics Supported

RECENT experiments on the scattering of electrons by light gases, hydrogen, helium and the lighter hydrocarbons, especially designed to decide between the classical mechanics and the new wave mechanics, resulted decidedly in favor of the latter, said Dr. A. L. Hughes, of Washington University, retiring vice-president of the physics section, reviewing progress in this field.

In one particular case, the wave mechanics predicted just half the scattering given by classical formulas. Experiment showed the wave mechanics was right. The scattering of electrons was also found to be identical with the scattering of X-rays under similar circumstances.

The classical mechanics assumes that forces in the atomic world obey laws laid down by Newton, which do work well for larger masses. Wave mechanics assumes that with every electron is associated a wave, and this "wave function" modifies its behavior in ways that can be calculated by the theory.

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VETERINARY MEDICINE

Sulfanilamide Beneficial In Fowl Pneumonia

SULFANILAMIDE, conqueror of a score or more of human diseases, appears to be good also for some of the diseases that afflict the poultry yard. It has been used successfully in treatment of fowl pneumonia and some types of eye infection by D. E. Lothamer of Louisville, Ohio. In most cases, the treated birds had fully recovered within 24 hours, with no unfavorable after-effects.

Before undertaking treatment with sulfanilamide, Mr. Lothamer tried heavy overdoses experimentally, both on three-day-old chicks and adult, laying fowl. The chicks fell into a condition of stupor, from which they recovered intermittently only to lapse again. Given doses of sodium bicarbonate, they recovered within 36 hours and remained normal.

The laying hens showed no immediate ill effects of over-dosing with the drug, but presently began to lay soft-shelled eggs, despite the fact that their ration included plenty of calcium, and also vitamin D. In some cases, the disturbance was so severe that the hens never recovered the ability to lay hard-shelled eggs, although most of them returned to normal functioning after the overdoses of sulfanilamide were stopped.

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FOR TURBOSUPERCHARGER

Vice President Wallace is shown here presenting the 1940 Collier Aviation Trophy to Dr. Sanford A. Moss, General Electric engineer, and to the U. S. Army Air Corps for the development of the turbosupercharger that makes possible airplane flying at very high altitudes. It is now part of the equipment of the Boeing Flying Fortress, Lockheed P-38, Republic Lancer and Thunderbolt and other high altitude planes. Major General Walter R. Weaver, acting chief of the Air Corps, represented the Air Corps.

PSYCHOLOGY

Fanatical Super-Patriotism May Impede Defeat of Japs

Would Prevent Any Real Opposition to Japan's War Efforts on Part of Most Liberal Elements There

JAPANESE fanatical super-patriotism may make them harder to defeat than might be anticipated from a mere count of their man power or battleships and airplanes.

This is the view of the psychologist Dr. Otto Klineberg, of Columbia University, specialist on racial differences and the relation between culture and psychology.

"Even the Chinese, with all the hatred and opposition which they felt toward the Japanese imperialists and their followers, still expressed their admiration of the unbounded love which the Japanese felt toward their own country," Dr. Klineberg said in reply to a query about the Japanese habits of mind. "I think, that this will mean that a very great many Japanese will be willing to sacrifice themselves in order to win a victory. This is obviously not an exclusively Japanese characteristic.

"In this respect, as in others, the difference is entirely one of degree, but I do feel that the Japanese have a sense of solidarity and identity with their country which is relatively rare in other national groups."

Dr. Klineberg discounts the idea, however, that the attack on Hawaii was one of "hara-kiri"—the suicidal act of desperate people committed in super-patriotic fervor. He sees in it nothing he regards as characteristically Japanese, any more than it is characteristically German or Italian.

"The sudden attack by the Japanese, and their continued all-out offensive at the present time, argues in favor of a definite plan to win, rather than to go down fighting," Dr. Klineberg said. "The attack in itself, treacherous as it was, seems to me not at all related to anything specific to the Japanese personality. It is of course cut after the same pattern as the customary Nazi procedure, and I am definitely inclined to ascribe it to Japan's relation to the Axis rather than to any peculiar Japanese tradition. My own limited knowledge of Japanese history does not suggest to me that such a pattern of treacherous attack is any more typical of the Japanese than it is of many other peoples with a long tradition of warfare."

But in another respect, Dr. Klineberg believes that the Japanese overgrown sense of national honor may have had a part in the outbreak of hostilities. He said: "The Japanese have committed themselves to a policy of expansion in Asia; they had enunciated this policy on many occasions, and felt in many cases an idealistic attachment toward it. By this I mean that they had persuaded themselves that it was a moral obligation rather than just a program of imperialistic expansion.

"As so many people have pointed out, 'face' has the greatest significance for the Japanese. The loss of face which would have resulted from bowing to American requests for abandonment of the expansionist policy, was something that the Japanese people simply could not accept.

"Since they probably felt that war was inevitable as a consequence, they took a leaf out of the Nazi notebook and struck first without warning.

"Once again it is important to point out that 'face saving' is not a peculiarly Oriental phenomenon, and that we and other Western nations have it as well; there is again a difference of degree, however, and its importance is undoubtedly greater for the Japanese.

"I do not believe it possible that Nomura and Kurusu could have had knowledge of the Japanese attack when they went to see Mr. Hull. It may be that they knew the attack was coming some time, but I feel that they could not have known that it was already in progress.

"In the light of what is known of the relation between the Japanese government and the military leaders, it seems to me much more plausible that the Navy began its campaign without getting definite instructions from the Japanese government to proceed. Once it had happened, however, the Japanese, with the hypertrophied sense of national honor to which I have referred, would undoubtedly go to the support of the military leaders and present a unified national front.

"I think, too, that this will mean that the 'liberal' elements in Japan can not be counted upon for any real opposition to the Japanese war effort because for the most part (although there will be exceptions) their feeling of national identity will be stronger than their former political affiliations."

GENERAL SCIENCE

Normal Persons Taught To Have Hallucinations

After Training Period During Which Tone Is Sounded At Regular Intervals, You May "Hear" It in Silence

PERFECTLY normal persons can be taught to "hear things" where there is no sound, psychologists were told at the meeting of the American Association for the Advancement of Science in Dallas.

Details of how hallucinations can be produced by the simple form of learning known to psychologists as "conditioning" were reported by Prof. Douglas G. Ellson, of the University of Mississippi.

Nearly half (42.9%) of a group of subjects taking part in Prof. Ellson's experiment under the most favorable conditions, learned to hear a tone when it was not being sounded. They had been prepared to "hear" it by a learning period during which the tone was sounded regularly every 30 seconds for 30 repetitions.

When the actual sounding of the tone was introduced and ended gradually, the subjects tended to have the hallucination of a tone after it had ceased to sound. If the start and termination were abrupt, however, only a few (8.5%) developed the hallucination.

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New Science Born

A BRAND-NEW science, paleogrostology, or the study of ancient grasses, made its bow at the meeting, when Dr. Maxim K. Elias of the University of Nebraska presented the results of his long study of fossil seeds found in the same rock strata of the West that have yielded the bones of early forms of horses, camels and other herbivorous animals that lived on this continent in the Tertiary geologic period.

Seeds proved the most dependable plant parts for identification of these ancient grasses, Dr. Elias found. Earlier identifications of leaves and other vegetative parts have sometimes described as grasses plants that are not grasses at all.

Examination of fossil grass seeds from successive strata of rocks yielded evidence that climates of the ancient West went through slow swings from dry to moist and back to dry again, many times. Interesting also is the change in the types of teeth in the jaws of herbivorous animals after the evolution of the grasses began. These long-extinct hoofed creatures readily took to the food-plants which have been the mainstay of their families ever since. Their evolution was strongly influenced by the evolution of the grasses, and in their turn the animals also influenced the development of distribution of prairie vegetation.

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Tooth Decay Still Riddle

DISCOVERY that people whose drinking water contains fluorine have less tooth decay than the rest of us has only partly solved the riddle of how to prevent tooth decay, it appears from the report of Dr. Philip Jay, of the University of Michigan School of Dentistry.

Adding fluorine to community water supplies in order to prevent tooth decay is not advisable on the basis of present knowledge, Dr. Jay emphasized.

He reported studies showing that fluorine in the drinking water may prevent decay by preventing the growth of mouth bacteria associated with tooth decay. Examination of 2,100 children showed that the number of these bacteria in the children's mouths are "remarkably low" in communities where the drinking water contains fluorine.

These studies also showed that it is the water supply and not the mineral content of the fruits and vegetables grown in these areas that is responsible for the relative lack of tooth decay or caries.

"Further studies must be conducted," Dr. Jay stated, "before this caries-inhibiting phenomenon is fully understood."

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MEDICINE

To Study the Nose As an Air Conditioner

AN ALL-OUT attack on the common cold and other respiratory diseases has been launched at the University of California Medical School.

Under the direction of Dr. William J. Kerr, professor of medicine, a group of ten doctors in a mass assault on every angle of this multiple menace will study respiratory diseases including those caused by bacteria and viruses (ultramicroscopic disease agents), and the head, throat and chest maladies caused by allergies and other identifiable agents.

The body's defenses against colds, including the efficiency of the human nose as an air-conditioner, will be analyzed. Some doctors believe that a nose subjected to violent changes from warm to cold air sometimes fails to rally from such shocks sufficiently to carry on its air-conditioning service, and that a cold results.

The relation between overcooling, atmospheric conditions and sudden temperature changes to cold-catching will be studied in a specially built room, large enough to accommodate six persons, in which temperature and humidity can be changed rapidly to any desired condition.

Experiments conducted in the same university and reported a year ago indicated that mere proximity to an infected person will not necessarily spread a cold to others. Subjects with colds were shut in the same room with well persons for as long as six days without transmitting the disease. Dr. Kerr and his staff will deliberately attempt to transmit a cold from one person to another so that they may trace the infection route that apparently makes colds epidemic at times.

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PUBLIC HEALTH

Cholera Possible in Japan If Crowded Cities Are Bombed

EFFECTIVE bombing of Japan's crowded, inflammable cities might easily give rise to an epidemic of the deadly Asiatic cholera, U. S. Public Health Service epidemiologists believe.

Two cases of cholera in at least one Japanese province (Taiwan) have been reported to the Public Health Service this year, and it is believed many more occurred. Cholera prevails in the Far East but there is none in the United States.

Cholera is spread by eating raw foodstuffs and drinking water infected with the microscopic curved rods which are the cholera germs. Normal supervision of these sources would be disrupted by severe bombings of Japanese "paper" cities.

A far higher number of people would be made homeless in Japan by bombings than in this country where living quarters are less crowded and more durable.

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MEDICINE

Rats Uninjured By Subshock Dose of Insulin

DAMAGE to body organs due to heavy insulin dosage required in shock treatment for the mental disease, dementia praecox, may be avoided by lesser insulin doses, it appears from studies reported by Dr. Frank N. Low and Dr. H. Ward Ferrill, of the University of North Carolina (*Endocrinology*, December).

Five successive generations of white rats were given insulin doses just under amounts necessary to cause shock. Examination of the rats after death and study of their organs under the microscope showed no damage directly traceable to the insulin.

Some psychiatrists believe that results in dementia praecox treatments with insulin are just as effective if shock is not produced. There is some evidence that shock-doses of insulin damage the human system. The North Carolina experiments indicate that sub-shock insulin doses are safe.

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ENTOMOLOGY

Mexican Bean Beetles Spread Over Eastern U. S.

A FOREIGN enemy that devastates American fields, but specializes in fields of only one kind, is described in the new Smithsonian Institution Report. It is a beetle from Mexico, whose devouring appetite is restricted to one group of plants, the legumes. Its attacks therefore are limited to fields of beans, peas, clover, alfalfa and related plants. However, because of the importance of this group of plants in agriculture, the Mexican bean beetle is rated as a major crop pest.

It is no newcomer in this country, although its destructive spread has occurred in recent times. It apparently crossed the border into the Southwest nearly a century ago, during the Mexican War. Ecological factors in that region seem not to have been particularly encouraging to it, for it did not increase to pest proportions.

Shortly after the First World War, however, it appeared in Alabama, possibly carried there in a shipment of alfalfa from one of the Southwestern states. In the moister, warmer climate of the Southeast it throve and spread rapidly, for it is a restless flier during the hottest days of summer and it lays huge numbers of eggs. By 1932 it was reported from all the states east of the Mississippi except two at opposite corners of the map, Wisconsin and Florida.

It seems now to have become relatively stabilized in its distribution, and its spread has slowed down.

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SEISMOLOGY

Earthquake Felt In Fairbanks, Alaska

AN earthquake shock of moderate intensity was felt in Fairbanks, Alaska, early on Saturday morning, Dec. 20. Seismologists of the U. S. Coast and Geodetic Survey observatory there, reporting through Science Service, calculated that its epicenter was about 20 kilometers (12.4 miles) from Fairbanks, probably southeast of the city. This region is known to be actively seismic; there was a severe quake there a few years ago. This earthquake began at 3:46.5 a.m., local time.

Science News Letter, January 3, 1942

ARCHAEOLOGY

Mountaineer-Caveman Lived on Texas Border

A PRIMITIVE type of prehistoric mountaineer cave man, whose existence had been detected in Texas caves, has now turned up "over the border." Skeletons and belongings of one of the strangest Indian groups have been unearthed in four Mexican caves and 16 other sites, by a Smithsonian Institution archaeologist and Mexican laborers, the Smithsonian reports.

Pronounced one of the most primitive types of Indian life yet found in the New World, the mountaineers are now believed to have spread over a considerable area several thousand years ago. The expedition to trace their southward extension was led by Walter W. Taylor, Jr., a Smithsonian collaborator. They had been first detected in the Big Bend region of Texas by Frank M. Setzler of the National Museum.

Caves of the mountaineers yielded rush woven sandals and matting and stone weapon points and arrow shafts used in hunting, but they had no pottery for housekeeping. They were not farmers, depending rather on gathering seeds and grinding them, it is supposed.

The ancient mountaineers were odd looking, judging by the discovery that their skulls at the back were large and thick. The majority, it appears, may have had heads noticeably bulgy at the back.

Science News Letter, January 3, 1942

IN SCIENCE

PHYSIOLOGY

Dogs May Sweat Through Skin As Well As Tongue

THAT old fable that dogs pant because they cannot sweat has been "shattered" by discovery of sweat glands in their skins, says the editor of the *Lancet*, (Nov. 15).

J. G. Speed, an Edinburgh researcher, has found sweat glands in the skin of the lips, head, back, thorax, shoulders, thighs and pads of the feet, a finding previously reported by numerous other investigators but apparently not generally known.

Nevertheless, the dog does pant, comments the *Lancet* editor, adding that it would be interesting to know how effective the skin sweating is and whether all breeds of dogs are equipped with sweat glands in their skin.

Absence of visible moisture on the skin may be due to efficient evaporation while the probability of water vapor enmeshed in the hairs suggests the reverse, the *Lancet* editor states.

Science News Letter, January 3, 1942

SURGERY—PSYCHOLOGY

Safe Brain Lobe Removal Reported at Northwestern

WHEN the dominant frontal lobe of the brain is removed, the remaining frontal lobe takes over new functions to such an extent that "a deficit in powers of association is frequently impossible to detect," Dr. John Martin, of Northwestern University Medical School, reported.

In 8 out of 10 such operations reported by Dr. Martin, the patients not only survived but are able to lead normal, useful lives, having returned, as Mr. Martin put it, "to a position of social and economic integrity."

The operation was performed because of tumors of the frontal lobe. The frontal lobe, Dr. Martin said, is one of the few locations in the brain where such a radical operation as complete removal should be done, when feasible, to give the patient maximum benefit, although the operation is by no means a "benign procedure."

Science News Letter, January 3, 1942

E FIELDS

GEOGRAPHY

South American Scientist Honored With Medal

INTER-American science relations received new emphasis in the award of the American Geographical Society's Charles P. Daly Medal to an eminent South American scientist, Dr. Julio Garzón Nieto, chief of the Office of Longitudes and Frontiers of the Colombian Ministry of Foreign Relations. Details of the award are given in *Geographical Review*. (January)

Dr. Nieto has for the past 30 years supervised the preparation of a great map of Colombia, on a scale of 1 to 500,000, based on astronomical observations. Sheets of this map are expected to be of great value in connection with the Western Hemisphere's self-defense against aggressor nations.

Science News Letter, January 3, 1942

ARCHAEOLOGY

Prehistoric Indian Homes Set in Order, Burned

DISCOVERY of Indian pit houses, which were carefully set in order and then burned over 1000 years ago, was announced to the New York Academy of Sciences by Prof. Ralph Linton, Columbia University anthropologist.

The stone metates on which the Indian women ground their meal were stacked against the wall and pottery was placed in the southwest corner of the house, and every pit-foundation home that has been excavated in the area was thus arranged and then fired, Prof. Linton said. He advanced the theory that the Indians deliberately burned these homes because of a death in the house. The houses were occupied in the 750-850 A.D. era, it is believed.

Prof. Linton reported the discoveries following a visit to excavations at Gobernador, N. M., which Edward J. Hall, Jr., has been conducting for Columbia University.

Unique features of the Indian settlement which is coming to light, said Prof. Linton, are the burials and also stockades which the owners customarily built around a large pit house and its associated granaries, fireplaces and shade shelters. No post barricades of the sort have been found previously in Southwest Indian country, nor have archaeologists previously found there the practice of exposing the dead and then burying them, although both these customs were familiar to Indians in some other parts of the country.

Possibility that these Indians may have come from the north, and may have been ancestors of modern Navaho Indians was suggested by Prof. Linton.

Science News Letter, January 3, 1942

PHYSIOLOGY

Drunk Tests Questioned, Time of Drinking Important

POLICE tests for drunkenness may be unfair to suspected motorists, experiments just reported by two Stanford University Medical School physicians indicate.

Their challenge is aimed at police tests which rely on the concentration of alcohol in the system as an index to drunkenness. Results of such tests are admissible as evidence in drunken driving cases in several states and cities.

Writing in the *Proceedings of the Society for Experimental Biology and Medicine* (November), Drs. Henry Newman and Mason Abramson conclude that drunkenness depends not alone on how much you drank, but when you drank it. They do not imply, however, that motorists can drink with safety.

They assert: "The presence of alcohol in the body over a period of several hours affects a change in the response of the nervous system to alcohol with the result that concentrations which originally produced drunkenness no longer are capable of showing this effect."

Two men were tested by requiring them to aim a gun at a moving target while under the influence of alcohol. Accuracy dropped rapidly after the first drink, but gradually returned to normal despite small doses which kept up the alcohol concentration in their systems.

In one test the amount of alcohol in the subject's system was kept constant for four hours after the first drink. A second drink, equal to the first, did not affect his aim.

"Apparently," the authors state, "the four-hour period at a lower alcohol concentration had been effective in 'adapting' the nervous system. . . ."

Drs. Abramson and Newman conclude that "the effect of a given concentration of alcohol depends not only on its absolute value but also on how long a time it has been present in the body."

Science News Letter, January 3, 1942

ARCHAEOLOGY

Case Grows Against Flies As Infantile Paralysis Carriers

THE CASE against flies as the culprits that spread infantile paralysis is strengthened by a discovery reported by Dr. Albert B. Sabin and Dr. Robert Ward, of the Children's Hospital Research Foundation and the University of Cincinnati College of Medicine (*Science*, Dec. 19).

Flies caught in Cleveland and Atlanta in the neighborhoods of infantile paralysis patients were infected with the virus of the disease, these doctors found. Previous discovery of the infantile paralysis virus in flies was made in insects trapped in rural areas, in one instance near a privy used by three households in which there were infantile paralysis patients.

Discovery of the virus in city flies is considered more significant, especially since the infected flies were found in modern neighborhoods with good plumbing and in which several children had mild illnesses that might have been abortive infantile paralysis at about the same time other children had recognized attacks of the disease.

Flies as carriers of the disease fit with the theory, suggested by recent evidence, that the virus attacks through the alimentary or digestive tract rather than through the olfactory nerve from the nose. Suggesive also is the fact that the fly season and the infantile paralysis season coincide.

"Among the many problems which these findings raise for future investigations," say the Cincinnati doctors, "the question of whether or not the virus may actually multiply in the flies deserves the most careful attention."

Science News Letter, January 3, 1942

METEOROLOGY

Moist Wind Paints Trees White on Exposed Side

See Front Cover

THE FROST KING, not the Snow Queen, produced the decoration shown on the front cover of this week's SCIENCE NEWS LETTER. It is an unusually heavy deposit of hoarfrost due to a moist wind that blew for several days across the cold top of Mount Roan on the Tennessee-North Carolina state line.

All the frost was deposited on the windward side of the balsam trees. The other side was as green as in summer. Thus, winter and summer met on this cold mountain top.

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ECOLOGY

NATURE RAMBLINGS
by Frank Thone

Ecologist at Work: Sequel

HOW a few inches of type on a printed page helped a Western universtiy to acquire a square mile of land was related at the Dallas meeting of the Ecological Society of America by Prof. Charles T. Vorhies of the University of Arizona. It was a story combining science and human interest — with a happy ending.

It started two years ago, when Prof. Vorhies appeared before the Ecological Society at Columbus, Ohio, with an account of how an old man, Joseph T. Page, had redeemed half a section of seemingly ruined rangeland, over a period of 17 years, simply by giving the grass a chance to grow again, with a little help in the way of grubbing out a few weeds every day. At the same time he got rid of burrowing rodents simply by channeling rainwater run-off into their holes. In the end, he had turned a piece of desperate-looking waste into good pasture again.

At the time, the story was made the subject of an item in the *Nature Ramblings* column (SNL, Feb. 3, 1940). It was also printed by a considerable number of newspapers. Notice of Mr. Page's work came to the attention of a New York banker, W. B. Trowbridge, who owned a big ranch near Mr. Page's little one. Mr. Trowbridge, a philanthropist in a quiet way, arranged for the purchase of the Page ranch and its presentation to the University as a range demonstration area. The University had long wanted such an area, but lacked funds for purchase and maintenance.

Subsequently, Mr. Trowbridge arranged for the purchase of an additional half-section immediately adjacent to the original Page tract. This land, still denuded, infested with burroweed and riddled with rodents, serves for "awful example" purposes, in contrast to the beautiful crop of grass that waves on the Page acres.

PRACTICAL CONSERVATION

"Before and After" pictures in a single photograph. The fence marks the boundary of the original Page Ranch, on what is now the Page-Trowbridge Experimental Range Reserve. Before Joseph T. Page began his slow, patient, nature-guided work of grassland restoration, nearly 20 years ago, the right side, now in rich grass, was as bare and denuded as the area on the left.

Shortly after its acquisition cooperative agreements between the University of Arizona, the U. S. Soil Conservation Service and the U. S. Forest Service were made, which resulted in surrounding the area with a strong new fence and erection of some buildings, completed early in 1941. On December 4, the tract was officially given the title, "The Page-Trowbridge Experimental Range Reserve."

One note of sadness enters the story: Mr. Trowbridge did not long survive the fulfillment of his benevolence; he died suddenly early last September.

Octogenarian Mr. Page, however, still hale and hearty, was invited last summer to appear on the radio program, "We, the people." He had the double thrill of an airplane ride all the way to New York and back, and of being interviewed before the microphone on a nation-wide network.

Science News Letter, January 3, 1942

PLANT PATHOLOGY

New Disease, Attacking Hardy Roots of Orange Trees

BRAZILIAN-AMERICAN cooperation has resulted in the uncovering of a hidden enemy that bores from beneath, threatening Hemisphere citrus crops. The enemy is a parasitic fungus, and its evil activities were detected by Prof. H. S. Fawcett of the California Experiment Station, Riverside, Calif., and Dr. A. A. Bitancourt of the Instituto Biologico of Sao Paolo, Brazil, who is now in this country, and presented a paper at the meeting of the American Association for the Advancement of Science in Dallas during the Christmas holidays.

The fungus, which bears the formidable name *Phytophthora cinnamomi*, discovered a few years ago infesting cinnamon trees in Sumatra. Its appearance in Brazil, and on the roots of orange trees, marks its first discovery outside Sumatra, as well as its first detection on a citrus host plant. It has not been found in this country so far, and it is hoped it will remain absent, for it could constitute a major menace to the entire citrus fruit industry.

Although it has been found only on the roots of the inedible sour orange, it is a possible menace none the less, because fully three-fourths of the citrus fruit trees in this country are grafted on the roots of sour orange. These roots

have always been used because of their hardiness, and especially because they have proven themselves completely immune to two other forms of crown rot disease caused by species related to the present fungus. Discovery of this chink in the armor of the sour orange is therefore causing scientists interested in citrus fruits a good deal of concern.

Science News Letter, January 3, 1942

MEDICINE

Factors Protecting Baby Mice Against Tuberculosis Found

Discovery Announced of Chemicals in Their Bodies Which Destroy Drug-Resistant Parts of Germ

DISCOVERY of chemicals in the bodies of young mice which destroy the drug-resistant waxy parts of the tuberculosis germ was announced at a meeting in Washington of the Committee on Medical Research of the National Tuberculosis Association.

The announcement was made by Dr. Bruno Gerstl of Yale University. Dr. Gerstl and Dr. Robert M. Thomas, also of Yale, found two years ago that newborn mice are immune to tuberculosis. A search was begun for the factor responsible for that immunity.

After analysis of the body organs of young mice, Dr. Gerstl concluded that the factor or factors were enzymes, chemicals produced by body cells which assist the life processes. When introduced into test tubes containing tuberculosis germs, the mouse enzymes broke up the fatty parts of the germs. The fatty components are believed to have defeated all attempts to kill the germ by drugs.

Commenting on Dr. Gerstl's announcement, Dr. William Charles White, chairman of the committee, stated:

"Dr. Gerstl's discovery . . . might lead to development of a preparation from the enzymes which will have a lethal effect on the germs within the human body."

Science News Letter, January 3, 1942

Blood Tests for Prognosis

A NEW method of following the course of tuberculosis in the body was described by Dr. Florence B. Seibert of Henry Phipps Institute, Philadelphia. She traced the rise and fall of albumin and globulin, constituents of the blood serum. To an old and baffling question, Dr. Seibert gave these answers: the albumin content of the blood always drops during tuberculosis; the alpha-globulin rises when the patient is improving; the gamma-globulin falls during the period of improvement, and the beta-globulin always rises just before death.

With these standards, analysis of the blood during tuberculosis can now be made as a diagnostic and prognostic procedure.

Science News Letter, January 3, 1942

MEDICINE

Influenza Prevented In Mice By Anti-Freeze in Gas Form

GAS warfare against germs may be the way to stop epidemics of influenza. The method gave mice 100% protection against the disease in experiments reported by Dr. O. H. Robertson and associates, of the University of Chicago. (*Science*, Dec. 26.)

The gas used by the Chicago scientists is propylene glycol, anti-freeze chemical and a close relative of ethylene glycol, the more familiar anti-freeze used in automobiles and high-powered airplanes. They had previously found that a very fine mist of this chemical killed bacteria in the air.

In the vapor or gas form, the chemical is even more effective, they now report.

When a fine mist of influenza virus was sprayed into a 20-gallon glass-walled experimental cabinet for from five minutes to one hour, all the mice in the chamber (35 in number) got influenza and died in six to ten days with extensive consolidation of the lungs.

When the propylene glycol vapor was let into the cabinet, in the proportion of one part of vapor to two million parts of air, and then the influenza virus mist was added, all the mice in the cabinet (32) remained well. The lungs of these mice, examined on the eighth day, were normal except for a small area of consolidation in one lobe in one mouse.

Similar results in protecting mice against influenza by propylene glycol mist, instead of the vapor, were reported about 20 days previously by Dr. Werner Henle and Dr. Joseph Zellat, of the University of Pennsylvania. (See SNL, Dec. 27, 1941.)

The propylene glycol gas which is so destructive to the influenza virus will not harm humans in the concentration used, and since it has no odor, will not even be noticed by them, it appears from Dr. Robertson's first report on the germ-killing action of the chemical. Associated with him in the work were Dr. Clayton G. Loosli, Dr. Theodore T. Puck, Dr. Edward Bigg, and Dr. Benjamin F. Miller.

Science News Letter, January 3, 1942

The *Incas* of ancient South America used in government administration clever models of towns and provinces, built to scale out of clay and small sticks and stones.

GENERAL SCIENCE

Temperature Is Stimulus to Rapid Evolutionary Changes

Experiments With Drosophila Indicate Mutations Appear Five Times as Frequently Among Warm Colonies

EVOLUTIONARY changes appear rapidly at high living temperatures, more slowly in chilly environment, experiments reported before the American Association for the Advancement of Science in Dallas indicate. Two Amherst College zoologists, Prof. H. H. Plough and Dr. George P. Child, discuss different aspects of this phenomenon.

They used as experimental animals the little vinegar fly or pomace fly, Drosophila partly because its small size and simple living requirements make it easy to rear huge numbers in limited space, partly because long study of this particular species has given science a better knowledge of its heredity than they have of any other organism.

Mutations, or abrupt evolutionary changes, appeared about five times more frequently among the offspring of a given number of animals in a "warm" colony than among the same number of offspring kept at a temperature ten degrees colder.

It does not seem that high temperature in itself is the cause of mutations, since mutations appeared also among the insects kept at low temperature. More probable is the assumption that the natural tendency of all living things to change is intensified by the speeding-up of life processes that occurs when it is warmer.

Prof. Plough and Dr. Child did not extend their conclusions to take in evolution in other animals, but if their results are valid for organisms in general it would be natural to infer that evolution goes on more rapidly in the tropics, and in the past has been most rapid during periods when the general temperature of the earth stood at a relatively high level.

Science News Letter, January 3, 1942

Life-Span of Anthills

THE TEEMING miniature city-states that we call ant-hills have a life-span of their own, a time during which they grow, flourish, decline and die, just as did Nineveh and Tyre. Dr. William A. Dreyer of the University of Cincinnati told an audience of zoologists attending the meeting of his studies on a group of great ant-hills in northern Illinois, which indicate that the average span of life for such a community is from 15 to 20 years.

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Earliest Immigrants

FOLLOWING the trail of America's earliest inhabitants to Alaska, where immigrants from Asia must have entered the New World long ago, Dr. Frank Hibben of the University of New Mexico has discovered two Folsom-like stone weapon points buried deep in the earth. These small clue objects of sharpened stone and traces of a prehistoric settlement now lying under ten feet of muck and an equal depth of peat, indicate that some ancient settlers came to southern Alaska and tarried at Cook Inlet.

Dr. Hibben addressed the Geological Society of America at a special session for discussing latest discoveries regarding early man.

In the Alaskan interior where gold miners have opened up thick muck deposits, near Fairbanks, Dr. Hibben has detected flint weapon points of an early American style known as the Yuma type of weapon.

Such finds indicate that Paleo-Indians were present in Alaska when the last Ice Age was ending or the present era was dawning, Dr. Hibben concludes, but the scattered finds are not yet clearly fitted into the pre-history of our continent.

It has been definitely shown by recent discoveries that man has been present in the Texas region of America long enough for streams to build three stages of terraces, Dr. E. H. Sellards of the University of Texas told geologists. Considering the amount of work that a river does in building and destroying successive valleys, he declared his belief that scientists must stretch out the time scale now commonly used in measuring cultural stages of man in the region.

Science News Letter, January 3, 1942

"Eyes" in the Back

IF YOU find an ancient Indian skull with a pair of holes in its back, like a pair of spectral eyes, don't assume that they were cut there by prehistoric medicine-men "to let the evil spirits out." Primitive trepanning was resorted to for that purpose, but these "eyes" in the back of the head were not necessarily made in that way, Dr. William M. Goldsmith of the University of Dubuque told zoologists at the meeting.

Such paired openings, known to anatomists as the "Catlin mark," occur naturally in some persons' skulls. They are born with these openings, which never grow shut. The Catlin mark was once thought to be rare, but Dr. Goldsmith has found, by means of X-ray examinations, "scores of families and hundreds of individuals possessing these strange openings in the back of the skull."

Since this anomaly has no doubt been common in the human race for thousands of years, he pointed out, there is no reason why these strangely marked skulls should not be unearthed.

Science News Letter, January 3, 1942

Ancient Forests

IF WE of modern times could walk in a forest of 50 million years ago, we would see some very familiar-looking trees—redwoods, bald cypress, hickory, oak—even though the animals would look like nothing on earth today. Yet the forest would be a strange one for all that, Prof. Ralph W. Chaney of the University of California pointed out, because of the very mixture of trees just mentioned, plus some additional species now found only in eastern Asia, like the ginkgo tree.

The forest—any forest—of the 50-million-year-ago Tertiary period was a grand mixture of trees now found only in widely separated parts of the earth. Thus, the redwoods are found only on the Pacific coast of North America, the

ginkgo only in Asia, the combination of bald cypress, hickory and oak only in the southeastern United States. Many thousands of years of climatic changes, of slow rise of mountain masses, of thrusting of deserts and dry grasslands into the once continuous forest belt, have acted to bring about this separation and sifting of species.

Science News Letter, January 3, 1942

SCIENCE CLUBS OF AMERICA

Sponsored by Science Service

NEWS OF CLUBS

DETROIT, Mich.—All of us have read about "strategic materials"; but how many are familiar with what they are, how they appear in their crude form, and what they look like when ready for commercial use? Nevertheless, members of the Mineral Club formed at Eastern High School, are surprisingly familiar with strategic materials. The reason is that this group has set up an exhibit of things important to our country's National Defense and is now also working upon conservation displays. The club is sponsored by Willard C. Moore, instructor in geography and geology.

MONTREAL, Canada—The Science Club of Sir George William's College (Evening Faculty) of Montreal, engages in discussions and demonstrations of chemical processes, and biological and physical phenomena. College level studies in psychology, scientific politics and economics are carried on avidly. The chairman of this club is Kenneth A. Hall. Membership in Science Clubs of America is not restricted to any age group. Young scientists need the guiding spirit of college men and graduates; they in turn, find affiliation with specialists desirable and helpful. Members of all ranks may be found in this international organization.

SCOTLANDVILLE, La.—Another college affiliate is the Just Biology Club at Southern University, sponsored by Dr. J. W. Hazzard and Mr. R. M. Ampey. Important among the activities of the club are discussions of topics brought up in biology classes. In this way there is an augmentation of college classroom work. Movies on biological subjects, exhibitions, publications, guest speakers and the preparation of scrapbooks and herbariums are some of the other efforts.

RALEIGH, N. C.—National Defense and conservation play an important role in the programs of many science clubs. The W.H.S. Science Club formed at Washington High School, is carrying on laboratory projects to demonstrate the making of the more common household products such as baking powder, soaps, inks, and pure food dyes; while others are conducting nutrition experiments. The club is sponsored by Mrs. Fanny V. Latham, teacher.

HERSHEY, Pa.—The program for the Science Forum, a club formed at the Hershey Industrial School, will be based on scientific developments as they relate to our National Defense. This club fingerprints all new students entering the school and will have over a thousand fingerprints before the term is over. Its exhibits will be entered in local science fairs. In May the group will hold its own Fourth Annual Fair. The club is sponsored by Charles L. Bilke of the science department.

LOCKHAVEN, Pa.—Helping the National Defense problems at home and making plans for bettering recreational facilities in their vicinity is part of the job undertaken by an independent group known as the Science and Engineering Club, sponsored by Clair S. Hursh, a ceramic engineer, engaged in research. Some research problems are given to the members for solution.

OWOSSO, Mich.—As long ago as Biblical times the observation was made and recorded that when there is no grass on which animals may feed, one of the first and most characteristic symptoms is blindness. Today we know that grass and green-growing plants contain a yellow pigment, carotene, the precursor of Vitamin A, which when absent from the ration of animals produces blindness. Some members of the Scintilla, a club at the Owosso High School, are experimenting with this vitamin while others are qualitatively analysing unknowns used in everyday life. The club is sponsored by F. W. Moore, chemistry teacher.

PITTSBURGH, Pa.—Everything directly or remotely connected with microscopic work and techniques is of interest to members of the 'Scope Club at Taylor Allderdice High School. Making slides, mounting specimens, micro-projection and photo-micrography are a few of the interests. The members also are mounting insects in plastics which they will exhibit at the Science Fair at Pittsburgh. This group under sponsorship of Mae Weber Smith, biology teacher, also is affiliated with the Pennsylvania Junior Academy of Science and the A.A.A.S.

Science News Letter, January 3, 1942

● RADIO

Saturday, January 10, 1:30 p.m., EST

On "Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Harvey C. Rentschler, director of the Westinghouse Lamp Division research laboratories, will discuss his work with ultraviolet against viruses. Listen in each Saturday.

Tuesday, January 13, 10:15 p.m., EST

Science Clubs of America programs over WRUL, Boston, on 6.04 and 11.73 megacycles.

One in a series of regular periods over this short wave station to serve science clubs, particularly in high schools, throughout the Americas. Have your science group listen in at this time.

New Machines And Gadgets

Novel Things for Better Living

Some of the advantages of an automatic stoker can be yours if you install in your chimney a thermostatically controlled damper that has just been patented. When the fire is too hot, it closes, and vice versa. It saves coal, as well as attention to the fire.

No more pounding out of blackboard erasers for Johnny when he wants to help teacher. No more choking chalk dust in the classroom. If teacher is up-to-the-minute, she will have her blackboard erasers cleaned with a new vacuum cleaner attachment just invented and patented. It plugs in to the regular installed vacuum cleaner system. A series of bars, acting as a washboard, would loosen the chalk which is at the same time whisked away by the suction.

Tight garters interfere with circulation and leave an ugly mark—or so they say. A garter that is not tight, that leaves no mark, yet does not slip, has recently been patented. It is not worn on the stocking but above it, and the stocking is suspended from the garter by straps. The secret is that the garter is made of three layers of material, the two inner ones being of a porous rubber. The innermost layer is perforated with a number of holes. The nonslip quality is due, the inventor thinks, to the protrusion of the flesh into these holes. More likely, these holes, backed by the next outer continuous layer, act as vacuum cups.

How would you like a typewriter with a carriage 12 feet long and several inches in diameter? Such a monster is very useful for some purposes. It was developed for putting the specifications, dimensions and other data on engineering and architectural drawings — an otherwise long and tedious hand job. It has several styles of type that can be used at will.

Contact microphones now enable airplane pilots to listen in on each of their engines in succession and detect any trouble developing before it becomes serious. Each mike is placed in direct contact with the engine and, like the doctor's stethoscope, hears the noises inside, undisturbed by any external sounds such as the rush of the wind. Mikes placed in the wing tips also warn of "wing flutter" during a power dive and give notice to the pilot that he must pull out before the flutter becomes dangerous.

This graceful hand of clear, transparent plastic makes an excellent eye-catcher for displaying sheer hosiery, transparent gloves, chiffon fabrics and sparkling jewelry, especially when illuminated. It may also be used as an intriguing source of light for some nook in the home.

The conventional icepack, consisting of a rubber sack filled with cracked ice, is a sloppy and inconvenient affair. A better device is now available. It is a rubber pad, smooth on one side but having hollow blocks on the other, looking much like the tread of a non-skid tire. The blocks are filled with water hermetically sealed in. The thing is simply placed in the freezing compartment of a refrigerator. When frozen, it can be wrapped around the head, smooth side inside, or applied to any other part. It fits nicely and never leaks.

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, *1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 85.*

Science News Letter, January 3, 1942

PLANT PATHOLOGY

Chemical May Control Deadly Elm Disease

CHEMICAL injections may some day conquer the deadly Dutch elm disease, now extensively ravaging the elm of the northern Atlantic coast states. Hope of bringing this to pass is held out by experiments performed by Dr. George Zentmyer of the Connecticut Agricultural Experiment Station.

Wilting of leaves, first noticeable symptom of Dutch elm disease, had long been believed due to simple drought, provoked by the choking up of the sap ducts. Dr. Zentmyer suspected that the wilting might possibly be caused by a toxin secreted by the fungus. This is known to be the case in certain other plant diseases, like tomato and cotton wilts.

He grew a quantity of the elm disease fungus under laboratory conditions and made a filtered extract from it. He dipped cuttings of various plants—snapdragon, tomato, elm, etc.—into the extract. The characteristic wilt developed. The same reaction, as well as the staining of the wood which is another symptom of the elm disease, was observed when injections of the filtrate were made into small trees growing outdoors. These tests demonstrated rather definitely that the wilting is due to a toxin, rather than to simple mechanical clogging of the sap channels.

Preliminary tests have been made with a number of counteracting chemicals, and some signs of benefit have been obtained with a few of them, including benzoic acid, hydroquinone and 8-hydroxyquinoline benzoate. Dr. Zentmyer is not satisfied, however, that he has found the real "cure" for Dutch elm disease. Much further research is considered necessary before recommendations for general use can be safely made.

Science News Letter, January 3, 1942

INVENTION

New Type of Flying Boat Can Land on Rough Sea

A NEW kind of flying boat that can make a forced landing on rough sea without upsetting has been designed by Claude Dornier, famous German aeronautical expert. It has been awarded U. S. patent 2,259,625, and is among 846 inventions granted patents recently.

The body of the novel boat just above the water line is wider than the rest of the fuselage above it, so that two bulges are formed on either side of the fuselage that extend a good part of its length. The bottom of the boat has a curved V shape such as is found on many motor boats.

This design, the inventor claims, is more buoyant, resists side to side rolling (which might dip the wing tips into the water), and replaced the air-resisting horizontal fins or floats on either side of the fuselage or other means provided for stability. It is more seaworthy and offers less resistance both to the air and to the water.

The side bulges can also be filled with water ballast when the boat load is light, which further reduces rolling.

Science News Letter, January 3, 1942

CHEMISTRY

Single Crystals of Boron Obtained For First Time

Mixture of Hydrogen Gas and Boron Tribromide Passed Over Tungsten or Tantalum Heated Filament in "Bulb"

THE FIRST single crystals of the little-known element boron have been produced in the laboratories of the Cornell University Department of Chemistry by Dr. A. W. Laubengayer, it was revealed in a paper read before the Sixth Annual Symposium of Physical and Inorganic Chemists at Columbus.

D. Laubengayer says, "A mixture of hydrogen gas and boron tribromide is passed over a tungsten or tantalum filament heated electrically to a very high temperature in an apparatus crudely resembling an electric light bulb. A reaction takes place at the surface of the filament, and boron is slowly deposited in the form of small single crystals. With proper care highly pure crystals may be built up."

Because boron is highly active, combining easily with other elements such as carbon and silica and with oxygen of the air, the formation of the pure crystals is a difficult operation, and special methods to eliminate chance contamination must be used. The Cornell technique is a refinement of older processes.

The research is directed toward a more exact understanding of the properties and crystal structure of boron. As less is known today of this substance than of any of the other common elements, a more perfect knowledge of the characteristics will facilitate the synthesis of new compounds with conceivably useful properties.

The work is of both practical and scientific interest in that the atomic structure of boron predicts an element of hybrid character; and since it may be considered on the borderline between aluminum and the non-metal carbon, unusual properties not realized in other elements may be expected.

Although little is accurately known about the pure element, it is reported to have a hardness approaching that of the diamond, and is harder than the sapphire. It is believed that it will scratch carborundum. The melting point may be very high and its electrical characteristics are unique. At ordinary temperatures it is considered a poor conductor, but it increases in conductivity a million-fold when raised to 1100 degrees Fahrenheit. These properties indicate possible practical applications in electrical devices.

Science News Letter, January 3, 1942

GENERAL SCIENCE

Chaos in the World Makes Business Value Research

THE hard-headed American business man is going in for Research, with a capital R, it appears from the National Resources Planning Board's newest report (*Reviewed, SNL, this issue*).

Taking the stand that research is a national resource, like America's rich minerals and water power and other countable treasures, the Board has checked up on research in our business world.

Growing chaos in the world has increased dependence of business men on research, is the revelation. Study—synonym for research—grows increasingly necessary due specifically to collapse of the foreign market, development of new products, and increased competition for consumer favors.

Some of the United States' most competent social scientists are aiding American business to use scientific methods of getting facts. Utility companies, factories, stores and other business organizations now take for granted the presence of psychologists, economists, statisticians, sociologists, and even psychiatrists on their staff rolls.

Included in the Planning Board's own research on research is a descriptive analysis of how 33 concerns are using this modern resource.

Here are random items showing how research is shaping policies and efficiency:

One large retail concern had a policy of complete secrecy about its operations. Following a study of consumer attitude this firm decided it would profit by different tactics. Sales persons were trained to become sales advisers, and where technical differences were important to the shopper, arrangements were made for the customer to consult the standards section. Demonstrations widely replaced secrecy.

Some firms have studied telephone orders, to find out how accurately such sales are carried out, what the problems of returns and repeat orders are, and what the merchandising policy of the firm should be regarding telephone orders, for efficiency.

To gain actual facts, one manufacturing concern undertook to study for two years the accident and illness cases among its 7,000 employees. Results caused the firm to modify its policy about employment and retirement of older workers. It learned that older workers were less of a financial liability than had been supposed.

The report on "Business Research" which the Planning Board has transmitted to the President of the United States declares that it is of national importance that social research methods, results and problems be utilized, relating them to other forms of research, "to the end that the highest possible contribution may be made to our national resources, our national income, and to the elevation of our standards of living."

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Giving scientific tests to two flat lumps, representing roasted *buns,* found in ancient Scythian village ruins, a Soviet botanist reported that Herodotus was right when he said that the Scythians ate millet.

•First Glances at New Books

MILITARY SCIENCE

WHAT THE CITIZEN SHOULD KNOW ABOUT OUR ARMS AND WEAPONS—James E. Hicks—*Norton*, 252 p., illus., $2.50. Simple but adequate and accurate presentation of facts about all the weapons used by our land forces, from rifles and hand grenades to field guns, tanks and airplanes. In addition to description of modern weapons, there is also a rapid summing up of the historical background of each type, with good line illustrations of both old and new.

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SCIENCE

RESEARCH—A NATIONAL RESOURCE. III, Business Research—Report of an Advisory Committee of the Social Science Research Council to the National Resources Planning Board— *Govt. Print. Off.*, 70 p., 20 c. See page 15.

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PSYCHOLOGY

MEASUREMENTS OF HUMAN BEHAVIOR—Edward B. Greene—*Odyssey Press*, 777 p., illus., $3.50. A textbook on mental tests and their uses, including not only intelligence tests, but measures of mechanical performance, aptitudes, artistic abilities, interests, attitudes, personality and conduct. Discussion of the problems involved and statistical methods of evaluation is included.

Science News Letter, January 3, 1942

RADIO

FIRST RADIO BOOK FOR BOYS—Alfred Morgan—*Appleton-Century*, 192 p., illus., $2. Simple radio sets that have been built by boys twelve years old are described in this book. Full instructions are given.

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ETHNOLOGY

BECOMING A KWOMA, Teaching and Learning in a New Guinea Tribe—John W. M. Whiting—*Yale Univ. Press*, 226 p., $2.75. An anthropological study which sheds light on educational and psychological processes, thereby providing information of interest to educators in our own civilization. The study also is enlightening on the subject of group habits and their transmission.

Science News Letter, January 3, 1942

ARCHAEOLOGY

EXCAVATIONS IN THE FORESTDALE VALLEY, EAST-CENTRAL ARIZONA—Emil W. Haury—*Univ. of Arizona*, 147 p., illus., 75c. An archaeological study of Mogollon type of Indian ruins dated by tree rings to the late seventh century, and a discussion of the Southwestern Mogollon culture, which the archaeologist pronounces underpinning for later and higher cultural Indian groups.

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POLITICAL SCIENCE

THE NEW RUSSIAN EMPIRE, A Theory of the Soviet State Conceived in Terms of a Dynamic Interpretation of Law—Andrew Efron—*Tuttle, Morehouse and Taylor*, 130 p., $2. Attempting to write with scholarly impartiality, the writer discusses legal and political foundations on which Stalin's government depends. He closes with the thought that, now that the United States is becoming the policy-maker of the earth, it may be possible to export democratic wisdom to Russia.

Science News Letter, January 3, 1942

ENTOMOLOGY

THE COLEOPTERA OF WASHINGTON: Carabidae: Agonini—Barbara Gray and Melville H. Hatch — Sphaeritidae and Histeridae—Rita Margaret McGrath and Melville H. Hatch—Buprestidae—Frank M. Beer and Melville H. Hatch—*University of Washington, Seattle*, 144 p., illus. $1.50 (Univ. of Washington Publications in Biology, Vol. 10, Nos. 1, 2, 3). A regional fauna of an important insect group, in form suitable for student use.

Science News Letter, January 3, 1942

TECHNOLOGY

THE RUBBER INDUSTRY — Josephine Perry—*Longmans, Green*, 96 p., illus., $1.50. A brief account of the growth and development of the rubber industry, particularly for boys and girls.

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NATURAL HISTORY

SOUTHERN NATURE STORIES, Book Three—W. B. Baker, Lucien Harris, Jr., and Wallace Rogers—*Turner E. Smith*, 261 p., 96c. A reader for use in elementary schools in the South, excellently designed for its adaptation both to its curricular level and to its regional setting.

Science News Letter, January 3, 1942

GENERAL SCIENCE—BIOLOGY

VITALISM: Its History and Validity—L. Richmond Wheeler — *William Salloch*, 275 p., $4.50. A scholarly survey of theory and arguments throughout the ages and in recent years, with special emphasis upon the revival of the concept of the organism.

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HISTORY

LANDS OF NEW WORLD NEIGHBORS—Hans Christian Adamson — *Whittlesey House*, 593 p., $3.50. Here, between two covers, are the histories of all the countries in the Western Hemisphere, told with an appreciation of the adventures and dangers and dreams that have shaped New World destinies. The progress of development in the United States can readily be compared with that of its neighbors in this novel arrangement of all-American history.

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ARCHAEOLOGY

ARCHAEOLOGY OF NEW JERSEY, Vol. 1—Dorothy Cross and others—*Archaeological Society of New Jersey*, 271 p., 73 pl., $2.50 paper, $3 cloth, $5 de luxe. A description of work at 39 sites excavated from 1936 to 1940 as a WPA project sponsored by the State Museum and other state agencies. Also included are chapters on artifacts and industries of the region, and many graphs and diagrams, all of which provide a notable addition to the archaeological record of this state.

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ENGINEERING

FROM MAN TO MACHINE, A Pictorial History of Invention—Agnes Rogers—*Little, Brown*, 160 p., illus., $2.50. A successful hybridization between a glorified picture book and a meaty, serious history of the many things we use in daily living. Pictures and text will answer a lot of questions about the chief inventions upon which our present machine is based—facts and information which even if you knew them already, you won't mind seeing and reading again.

Science News Letter, January 3, 1942

OCEANOGRAPHY

THE WATERS OFF THE COAST OF SOUTHERN CALIFORNIA, March to July, 1937—H. U. Sverdrup and R. H. Fleming—*Univ. of Calif. Press*, 117 p., $1.25.

Science News Letter, January 3, 1942

ARCHAEOLOGY

THE LIVING PAST—Cyrus H. Gordon—*John Day*, 232 p., $2.50. Dead mounds of earth in the Tigris-Euphrates Valley and the land round about were cities full of interesting people, thousands of years ago. Dr. Gordon tells what archaeologists are finding in those mounds and how the finds widen our concept of the human race.

Science News Letter, January 3, 1942